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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,919	02/03/2004	Chad A. Cobbley	MICS:0078-5	1688

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EXAMINER
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MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

MAIL DATE	DELIVERY MODE
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09/01/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/770,919	<b>Applicant(s)</b> COBBLEY ET AL.	
	<b>Examiner</b> JAMES M. MITCHELL	<b>Art Unit</b> 2813	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13, 15, 16 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) 3, 4, 16 and 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-13 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This office action is in response to applicant's remarks filed May 5, 2009.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 2 and 5-13 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The definition of a substrate is a supporting material on or **in**<sup>1</sup> **which** the components of an integrated circuit are **fabricated or attached**, or an insulating layer that components are formed on; therefore, since the dies contain circuits formed in semiconductor substrates the stack includes a substrate. Alternatively, the die stacks are formed on/ attached to a holder albeit temporarily and therefore the holder is still within the definition of a substrate. As such, the claim is not enabled, since one skilled in the art to which it pertains, or with which it is most nearly connected, cannot make a stack formed on *what it excludes*.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 5, 9-11 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Ball (U.S. 7,371,612) .

6. The applied reference has a common assignee with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

7. Ball (e.g. Fig. 3, 5, 9) discloses:

(cl. 1, 10) a temporary holding surface (302) having a plurality of semiconductor die stacks thereon (104/104; Fig. 5), the temporary holding surface configured to temporarily hold the die stacks, wherein each of the plurality of semiconductor die stacks include at least two semiconductor die (Fig. 5) permanently coupled together by an adhesive (206; e.g. cured; Col. 4, Lines 10-18)) , wherein the stack of at least two semiconductor die comprise KGD/ each of the die stacks are KGD (e.g. testing of wafer provide dies that good which are subsequently mounted on a board etc. this also includes an embodiment where all the stacks are good) and wherein the plurality of

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<sup>1</sup> See FN. 2

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semiconductor die stacks do not include a lead frame (e.g. none shown) or a substrate (e.g. dies have no discrete substrate other than their own Si, substrate body);

(cl. 5, 11) at least three dies connected by adhesives (2; Fig. 9);

(cl. 9, 15) one of at least two dies comprise a memory die (Col. 5, Lines 35-39).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over. Ball (U.S. 7,371,612) in combination with Jeong et al. (U.S. 2006/0177954).

11. Ball discloses the elements stated in paragraph 7 of this office action, but does not explicitly that its tape is a reel. Examiner had taken official notice that use of a reel are well known in the art for providing tape material to support chips during dicing.

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Jeong is provided to further evidence the use of a reels to provide tape material. As such, it would have been obvious to one of ordinary skill in the art to utilize a tape reel in order to provide an alternate dicing tape for dicing of the wafer.

12. Claims 6, 7, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over. Ball (U.S. 7,371,612).

13. Ball discloses the elements stated in paragraph 7 of this office action, but does not disclose the claimed dimensions of the chips.

14. However, applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. As such, the selected dimensions would have been obvious to one of ordinary skill in the art, since it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

### ***Response to Arguments***

15. Applicant's arguments filed May 5, 2009 have been fully considered but they are not persuasive. Applicant contends that the 112 rejection is improper, because one of ordinary skill in the art would clearly "understand how to form a die stack without a substrate..." Examiner respectfully disagrees. Applicant's invention is really a die stack

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that is **not mounted on a substrate** this is different than a claim of a die stacks “do not include a substrate.” For example, if the claim was a chip/die or die do not include a substrate, one of ordinary skill in the art would not be able to make the die, because the IC of a die are formed in or on a substrate. Therefore every die includes a substrate. Likewise, a die stack that do not include a substrate suffers from the same deficiencies. If the stack is formed of dies it must include a substrate. While applicant contends that a substrate in a die has a different connotation than in a die stack which can be gleaned by the specification. Since applicant has not provided for any special definition **or precluded** any particular definition for a substrate, it would be improper to import such a limitation into the claim. See MPEP 2111.01[R-5]. Examiner’s definition is explicit in the USPTO class definition section<sup>2</sup> along with countless references or articles dealing with chip manufacture, while applicant has merely relied on conjecture that is insufficient to overcome examiner’s prima facie case. Note that the arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) (“An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness.”).

16. As for applicant’s contention that his claim is distinguishable, because while Ball may show its dies being KGD, it does not teach that it’s a KGD die stacks. Examiner is unpersuaded. A claim of KGD die stack is not limited as applicants contend to a stack

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<sup>2</sup> See <http://www.uspto.gov/web/patents/classification/uspc257/defs257.htm>

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that has been tested while in a stack configuration rather two attached, stacked KGD are encompassed within the broad claim of KGD die stack. Moreover, applicant has already indicated that his die stack does not have a permanent substrate; hence, the stack is not in a permanent package and still subject to being defective in subsequent processing. When applicant's chips are moved to permanent substrate he only has two functional dies that make up his KGD stack, which is the same structure as in the prior art.

17. Lastly, applicant appears to suggest that the obviousness determination of his claimed invention based on Ball was improper, because it can not be based on conclusory statements, but objective evidence. As applicant is aware, a conclusory statement as established by case law is one where there is neither a rationale/motivation/legal precedent given. Because the obviousness statement was based on legal precedent, the basis is supported in the record and not a mere conclusory statement.

### ***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art in Yamada discloses permanently stacked on a temporary substrate.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES M. MITCHELL whose telephone number is (571)272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew Landau can be reached on (571) 272-1731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C. Landau/  
Supervisory Patent Examiner, Art  
Unit 2813

August 27, 2009  
/James M. Mitchell/  
Examiner, Art Unit 2813